**STANDING COMMITTEE ON ENERGY**

**(2006-07)**

19

**FOURTEENTH LOK SABHA**

# MINISTRY OF NEW AND RENEWABLE ENERGY

## DEMANDS FOR GRANTS
## (2007-08)

**NINETEENTH REPORT**

**LOK SABHA SECRETARIAT**
**NEW DELHI**
**April, 2007 / Vaisakha, 1929 (Saka)**

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## (2006-07)

## (FOURTEENTH LOK SABHA)

## MINISTRY OF NEW AND RENEWABLE ENERGY

## DEMANDS FOR GRANTS
## (2007-2008)

**Presented to Lok Sabha on 27.04.2007**
**Laid in Rajya Sabha on 27.04.2007**

**LOK SABHA SECRETARIAT**
**NEW DELHI**
**April, 2007 / Vaisakha, 1929 (Saka)**

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**CONTENTS**

Page

COMPOSITION OF THE COMMITTEE …… (iv)

INTRODUCTION …… (vi)

INTRODUCTORY ……..…….. 1

**REPORT**

Chapter – I Analysis of Demands for Grants (2007-08) of the Ministry of New and Renewable Energy …….

Chapter – II Major Programmes of the Ministry of New and Renewable Energy – Targets and Achievements …..……..

Statement of Conclusions/Recommendations of the Standing Committee on Energy contained in the Report ……

# ANNEXURES

I. Annexure – I: Analysis of Demands for Grants of the Ministry of New and Renewable Energy

II. Annexure – II: Demands for Grants (2007-08) Ministry of New and Renewable Energy.

III. Annexure – III: Minutes of the sittings of the Standing Committee on Energy held on 15.03.2007 and 09.04.2007.

## COMPOSITION OF THE STANDING COMMITTEE ON ENERGY (2006-07)

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2. Shri J.S. Chauhan - Deputy Secretary
3. Shri Shiv Kumar - Deputy Secretary
4. Smt. Neena Juneja - Senior Executive Assistant

## INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorized by the Committee to present the Report on their behalf, present this Nineteenth Report (Fourteenth Lok Sabha) on Demands for Grants of the Ministry of New and Renewable Energy for the year 2007-08.

2. The Committee took evidence of the representatives of the Ministry of New and Renewable Energy on 15th March 2007.

3. The Committee wish to express their thanks to the representatives of the Ministry of New and Renewable Energy for appearing before the Committee and for furnishing the replies to the points raised by the Committee in connection with examination of the Demands for Grants (2007-08).

4. The Standing Committee on Energy considered and adopted this Report at their sitting held on 9th April 2007.

5. For facility of reference and convenience, the observations and recommendations of the Committee have been printed in bold letters in the body of the Report.

**NEW DELHI;**
**16 April, 2007**
**26 Chaitra, 1929 (Saka)**

**GURUDAS KAMAT,**
**Chairman,**
**Standing Committee on Energy**

# REPORT

## Introductory

Energy is the basic requirement for all activities of human life, i.e., agriculture, industry, transport, commercial and domestic needs. Renewable energy is derived from resources that are regenerative or for all practical purposes cannot be depleted. For this reason, renewable energy sources are fundamentally different from fossil fuels, and do not produce as many greenhouse gases and other pollutants as fossil fuel combustion.

2. Mankind's traditional uses of wind, water, and solar energy are widespread in developed and developing countries; but the mass production of electricity using renewable energy sources has become more commonplace recently, reflecting the major threats of climate change due to pollution, exhaustion of fossil fuels, and the environmental, social and political risks of fossil fuels and nuclear power.

3. The Ministry of New and Renewable Energy (MNRE) is the nodal Ministry of Government of India for all matters relating to new and renewable energy. The broad aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country.

4. The mission of the Ministry of New and Renewable Energy as stated by them is as follows:

(i) Energy Security: Lesser dependence on oil imports through development and deployment of alternate fuels (hydrogen, bio-fuels and synthetic fuels) and their applications to contribute towards bridging the gap between domestic oil supply and demand;

(ii) Increase in the share of clean power: Renewable (bio, wind, hydro, solar, geothermal & tidal) electricity to supplement fossil fuel based electricity generation;

(iii) Energy Availability and Access: Supplement energy needs of cooking, heating, motive power and captive generation in rural, urban, industrial and commercial sectors;

(iv) Energy Affordability: Cost-competitive, convenient, safe and reliable new and renewable energy supply options; and

(v) Energy Equity: Per-capita energy consumption at par with the global average level by 2050, through a sustainable and diverse fuel-mix.

5. The grid-interactive renewable power at a glance as given by the Ministry in its presentation during evidence before the Committee is as follows:

(in MW)

| **Resource** | **By end of 9th Plan** | **10th Plan** | **11th Plan** | **By end of 11th Plan** |
|---|---|---|---|---|
| Wind Power | 1667 | 5415 | 10500 | 17582 |
| SHP | 1438 | 520 | 1400 | 3358 |
| Bio-Power | 368 | 750 | 2100 | 3218 |
| Solar-Power | 2 | 1 | 50* | 53 |
| Total | 3475 | 6686 | 14050 | 24211 |

6. The Ministry of New and Renewable Energy has been facilitating the implementation of broad-spectrum programmes covering more or less the entire range of new and renewable energy. The focus areas of the Ministry broadly seek to supplement conventional fossil-fuel-based power through harnessing wind, small hydro and bio power; reach renewable energy to remote rural areas for lighting, cooking and motive power; reach renewable energy in urban, industrial and commercial applications; and develop alternate fuels and applications for stationery, portable and transport uses apart from supporting research, design and development of new and renewable energy technologies, products and services. The detailed Demands for Grants of the Ministry of New and Renewable Energy were laid on the table of Lok Sabha on 20th March 2006. Demand No. 65 of the Central Government expenditure pertains to the Ministry under which provision has been made for plan and non-plan expenditure. It consists of

* Dependent on future developments to make solar technology cost-competitive for grid-interactive power generation

two parts viz. Revenue Section and Capital Section for 2007-2008 as per the figures given below:

(2007-2008)

(Rs. in Crores)

| | Plan | Non-Plan | Total |
|---|---|---|---|
| Revenue Section | 561.75 | 6.90 | 568.65 |
| Capital Section | 64.25 | - | 64.25 |
| Total | 626.00 | 6.90 | 632.90 |

7. Having scrutinized the detailed Demands for Grants (2006-2007) given in Annexure-I, the Committee find that the Ministry is unable to utilize all the funds allocated to them under most of their programmes. A similar trend was noticed during examination of Demands for Grants (2006-2007). In response to a recommendation at Sl. No.2 in the 13th Report on Demands for Grants of the Ministry of New and Renewable Energy for the year 2006-2007, the Ministry had not taken up any steps to initiate monitoring mechanisms to ensure utilization of funds by the States as is evident from Minister's statement on the above, under Direction 73A. To another recommendation at Sl. No. 15 in the same report on 'waste to energy projects' of the Ministry, the Ministry had not informed whether any feasibility studies had been carried out for major metropolitan cities under the programme. The remaining 15 of the 17 recommendations contained in the 13th Report were in the various stages of implementation.

8. The Committee endorse the Demands for Grants of the Ministry of New and Renewable Energy for the year 2007-2008 subject to the observations made in the succeeding paras of the Report.

## CHAPTER-I

### Analysis of Demands for Grants (2007-08) of the Ministry of New and Renewable Energy

1.1 The Ministry of New and Renewable Energy has not been able to make maximum use of the funds allocated to it from the year 2003-04 onwards. The following table as furnished by the Ministry shows the BE, RE and Actual Expenditure of the Ministry from the year 2003-04 onwards:

| 2003-04 | | | 2004-05 | | | 2005-06 | | | 2006-07 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BE** | **RE** | **Actual** | **BE** | **RE** | **Actual** | **BE** | **RE** | **Actual** | **BE** | **RE** | **Actual** |
| 624.80 | 390.00 | 375.82 | 599.80 | 400.00 | 235.12 | 599.75 | 350.00 | 298.37 | 603.64 | 386.57 | 255.3 (upto February) |

1.2 The actual utilisation of budget allocation quarter-wise during 2006-07 is as under:

| **Quarter** | **Expenditure (Rs. Crores)** |
|---|---|
| **Budget Estimates (GBS)** | **597.00** |
| **Revised Estimates (GBS)** | **380.00** |
| **Expenditure** | |
| 1st | 36.72 |
| 2nd | 4.42 |
| 3rd | 110.15 |
| 4th (upto Feb. 2007) | 104.03 |
| **Total** | **255.32** |

1.3 The Ministry has stated the factual position that the Gross Budgetary Support (GBS) proposed by the Ministry to the Planning Commission was Rs.1147 crore as per the following details:

| | **Rs. in crore** |
|---|---|
| Grid-Interactive & Distributed Renewable Power | 255 |
| Renewable Energy for Rural Applications | 263 |
| Renewable Energy for Urban, Industrial & Commercial Applications | 198 |
| Research, Design & Development | 150 |
| Supporting Programmes | 181 |
| Spillover Liabilities of 10th Plan Programmes | 100 |
| **TOTAL :** | **1,147** |

The GBS approved by the Planning Commission and sanctioned by the Ministry of Finance is Rs.628 crore.

1.4 An analysis of the above data show that there exists a trend in shortfall in utilisation of funds against the BE and cut of funds at the RE stage. When asked about the expenditure position the Ministry submitted in a written reply:

> "RE 2006-07 was fixed at Rs.380 crore. In addition, Ministry of Finance has directed that expenditure in the last / 4th quarter 2006-07 cannot exceed 33 per cent of BE 2006-07, with a further stipulation that expenditure in March 2007 cannot exceed 15 per cent of BE 2006-07. Accordingly, keeping in view expenditure booked upto February 2007 of Rs.255.32crore, this Ministry's expenditure limit for 2006-07 has been set at Rs.345.32 (255.32 + 90, i.e. 15% of BE) crore. No difficulty is envisaged in booking this amount. It might also be added that the matter regarding booking upto more or less the full RE 2006-07 amount has been taken up with the Ministry of Finance."

1.5 The main reasons for actual lower expenditure against BE / RE (GBS) as stated by the Ministry are as follows: -

(i) Progress in incurring expenditure in the Remote Village Electrification Programme started suffering from 2003-04 onwards, when Integrated Finance Division erroneously raised the issue that the Programme had not received Cabinet approval without taking cognizance of the fact that the Resolution under which the Commission for Additional Sources of Energy (CASE) was formed, clearly spelt out that this Commission had both appraisal and approval power within the allocated budget. On this principle the Ministry earlier Department, had been functioning.

(ii) In 2004-05, Finance refused concurrence to proposals of Programmes whose 10th Plan outlay exceeded Rs.100 crore on the aforesaid erroneous ground; in 2005-06, they extended the same erroneous logic to even programmes whose 10th Plan outlay exceeded Rs.50 crore on the ground that they required FM's approval.

(iii) Eventually in 2006-07 in end June 2006 the stand of the Ministry was upheld by the Cabinet. However, expenditure suffered from 2003-04 to the first quarter of 2006-07.

(iv) As per the subsidy scheme for grid-interactive power, covering small hydro, biomass, bagase cogeneration etc; subsidy is to be released only after successful commissioning of the project. Accordingly, although projects have been initiated, subsidy as in the past, could not be released.

(v) REC, the implementing agency for RGGVY, has been unable to furnish lists of remote/ villages and hamlets until late 2006-07. Further, these lists are being contested by states which claim otherwise. Accordingly, subsidy releases under RVEP suffered.

(vi) R&D Appraisal Mechanism could be put in place only in December 2006 because the entire issue of R&D had to be reexamined. Consequently, a clear direction has emerged in focus areas, mode of implementation, etc. However, R&D expenditure did suffer a bit during 2005-06.

1.6 The Ministry of New and Renewable Energy stated in a written reply to a query that the following steps shall be taken to ensure full utilisation of budget allocation during 2007-08:

"(i) Ambiguity hithertofore encountered in obtaining approval of schemes has been removed by seeking clear Cabinet directions on the same;
(ii) The Commission for Additional Sources of Energy would stand disbanded, which uptil now was the appraisal and approval authority for all schemes of this Ministry, because it was felt that it had ceased to serve the purpose for which it was intended, with concomitant adverse impact on the implementation of the schemes. The PIB/EFC/SFC procedure, which is considered more streamlined, will be adopted for appraisal of all scheme w.e.f. 2007-08; and
(iii) Programmes / schemes from 11th Plan, i.e., commencing 2007-08 have been rationalized and simplified. Consequently their implementation would be easier."

1.7 The Ministry has further informed that the following steps will also be taken to strengthen:

(i) Zonal Officer for each State, where a senior officer of this Ministry is the nodal point to facilitate processing of schemes within the Ministry; and

(ii) Zonal meetings chaired by Secretary, MNRE, introduced in 2006-07 to be made periodic.

1.8 Responding to a query during the sitting, the Secretary, Ministry of New and Renewable Energy explained the position regarding the role of Commission for Additional Sources of Energy as follows:

> "Commission for Additional Sources of Energy (CASE) was set up when this entire renewable subject was being dealt with by the Ministry of Science and Technology when they felt that adequate attention should be paid to renewable energy. This Ministry was created 25 years ago. I cannot sit in judgement to decide whether the CASE should have been done away with or maintained. I do not think the Ministry of Finance's attitude was strange. The CASE does not have the competence to approve and authorise the spending on plans and programmes that should have been brought to the notice of the Cabinet according to the Ministry of Finance's Circular on Appraisal by EFC, SFC and PIC and approvals at the appropriate levels.
>
> But what had happened during the earlier 23 years was that the CASE was giving approvals and the Ministry was spending. We said that it has been the practice, give us permission till the end of the Tenth Plan. that was given at the end of June. Again, we had to convene a meeting of the CASE. That took another three months time to get certain approvals, so much so that many of our sanctions could be issued only in the month of October or November. But now that CASE would stand abolished and with effect from next financial year, starting 1st April, the normal procedure of the Ministry of Finance would be followed. I do not foresee any problem.
>
> The second point is that the CASE was conceived to be a High-powered body consisting of very senior persons on the lines of Atomic Energy Commission or Space Commission. But over the years it deteriorated to be one of a body where people would be represented by junior officers and they come and take objections to the plans and programmes envisaged. The Ministry draws up plans. I have gone through the past papers though I was not there hoping that a particular programme would end up spending Rs.50 crore and this should be the pattern of expenditure. As a result even the CASE has objected to some of the programmes. In fact, the CASE was never intended to be an appraisal body which would sanction the fixed levels of subsidy or how much money should be given to whom. But, unfortunately while they were here to give broad policy directions on renewable energy it deteriorated to one of finding falut with the plans of the Ministry. Even during the last meeting of the CASE which was convened last year, we did not manage to get all our proposals through. In fact, I was keener than the Ministry of Finance to do away with CASE

mechanism so that we can expedite sanctions of plans and programmes. I think that sanction would stand corrected. But for the past, we are guilty not fully though, partly we are guilty not having taken recourse to solutions."

1.9 When the Committee enquired about the expenditure position in the States and use of funds, the Secretary stated:

"These things take a lot of time depending upon the State Governments' enthusiasm and it varies. Even now, there are some State Governments which have not claimed money that we have sanctioned in 2005-06 for which the second installment is due. They come up with a request that they are not able to disburse it and spend the money.

I would crave your indulgence. This problem is not only with this Ministry but cutting across all the sectors where the Government of India funds the State Governments and where there is a question of the State sharing involved. I am not an exception to the rule but I will definitely bring it to your notice that last year, I started a practice of holding a zonal meetings. I personally go to the States and get three or four States together, review each programme in detail. In some of the States, they have different implementing agencies. They have renewable energy development agencies, they have the Electricity Boards, they have the Forest Department and in some cases, it is the DRDAs. The multiplicity of implementing agencies also poses a different kind of problem. But I do not want to put a clause that there should be only one implementing agency because they should have operational flexibility of getting it done. But I do require the coordination at the State level so that there will be a proper feedback."

1.10 Regarding implementation aspect of other important programmes of the Ministry in the States, the Secretary informed the Committee:

"The other interesting point …… is regarding biogas part of it Rs.36 crore gives 1.5 lakh plants whereas in remote villages lighting it is Rs.135 crore which gives lighting for 2000 villages.

1.11 Regarding the Renewable Power projects, the representative further stated:

"Allocation for the 10$^{th}$ Plan was Rs.935 crore for creating 3,075 MW. We have actually spent Rs.300 crores. ……. so far as other aspect of Small hydro projects is concerned, we are only facilitating deployment of Small hydro projects."

**1.12 The Committee are concerned to note that there has been a downward trend in the utilisation of funds by the Ministry of New and Renewable Energy from the year 2003-04 onwards. Similarly, there has been a trend of cutting the budget of the Ministry by the Ministry of Finance at RE stage from the year 2003-04 onwards. Last year also a similar trend was noticed in the expenditure of the Ministry. Against a BE of Rs.603.64 crore, the RE for same year stood at Rs.386.57 crore. The actual expenditure up to February 2007 as informed by the Ministry was Rs.255.32 crore. The Committee note that the Ministry failed to make adequate expenditure in the first and second quarter of the financial year (Rs.36.72 crore and Rs.4.42 crore) resulting in a cut at the RE stage.**

**1.13 The Committee note that the main reasons specified by the Ministry for a lower actual expenditure during the year were on account of the fact that progress in incurring expenditure in the Remote Village Electrification Programme started suffering from 2003-04 onwards, when Finance Ministry raised the issue that Cabinet approval had not been taken without taking cognizance of the fact that the resolution under which the Commission for Additional Sources of Energy (CASE) was formed, clearly spelt out that this Commission had both appraisal and approval power within the allocated budget. Similarly, problems were faced with programmes whose 10$^{th}$ Plan outlay exceeded Rs.50 crore. As per the subsidy scheme also for small hydro, biomass, bagase cogeneration etc., the subsidy could not be released. Another reasons specified by the Ministry for non-utilisation of the funds was that REC (Rural Electrification Corporation), the implementing agency for RGGVY had been unable to furnish lists of remote villages and hamlets until late 2006-07. The Ministry has further informed that R&D appraisal mechanism could be put in place only in December 2006, because the entire issue of R&D had to be re-examined due to certain reasons.**

**1.14 The Committee, however, feel that the Ministry has taken too long a period to resolve various problems which are only administrative in nature. The Committee, therefore, desire that such problems should be attended to within the financial year in which these are encountered. The Committee hope that the expenditure position would improve in the year 2007-08 as the obstacles**

**encountered in the clearance and approval of schemes by way of dismantling of CASE and direct financial approval at the appropriate level by the Ministry of Finance would prove an effective method to check expenditure and streamline the procedures. The Committee feel that the rationalisation and simplification of the programmes / schemes for the 11th Plan commencing 2007-08 would help the Ministry in achieving both physical and financial targets. The Committee also hope that expenditure position would also improve by deputation of a zonal officer in each State to facilitate processing of schemes and zonal meetings to be chaired by Secretary, MNRE introduced in 2006-07 to be made more periodic. The Committee hope that they will be able to utilise all the funds allocated to the Ministry judiciously and expeditiously in the year 2007-08.**

**1.15 The Committee further desire that while developing various sources of new and renewable energy, cost effectiveness of the source should be kept in mind by making a cost-benefit analysis. For example, with an investment of 36 crore, 1.5 lakh of family type Biogas plants can be provided. So the basic idea should be to add maximum MW at least cost.**

**1.16 The Committee are also of the view that the Ministry should lay special emphasis on development of small hydel power projects in the North-East and Himachal Pradesh etc. where a lot of potential exists. Small hydel power projects do not involve a lot of displacement of people or disturbe the eco – system of thearea and can be developed in a short time. The Ministry should carry out techno-economic feasibility study to identify small hydel potential in various States on canals like projects on Indira Gandhi Canal in Rajasthan, Punjab and Haryana.**

**1.17 At the same time the Committee desire that other areas should not be totally neglected. The Committee desire that research and development in all the areas should be continued to be done. The Government should provide 100% subsidy for R&D activities and the Ministry should ensure that the amount allocated is fully utilised in identified key areas where research is required. The Committee also desire that more research needs to be carried out on tidal projects.**

## CHAPTER - II

## MAJOR PROJECTS / PROGRAMMES OF THE MINISTRY OF NEW AND RENEWABLE ENERGY

### A. Wind Power Programme

2.1 The Ministry has stated that the potential for wind power generation for both grid and off-grid applications was estimated at about 45,000 MWe taking sites having wind power density greater than 200 W/sq. m at 50 m hub-height assuming land availability in potential areas @ 1 per cent and requirement for setting up wind farms @12 ha/MW. Two-thirds of this potential, as specified by the Ministry lies in areas having a very modest wind regime with wind power density ranging between 200-250 W/m. at 50 m hub-height, which is considered suitable only for off-grid applications. However, when WEGs especially designed for this category of low wind power densities are made available in the market, then exploitation of this low end of the potential might become economically viable.

2.2 The Ministry has further stated that wind power capacity of 6315 MW has been installed up to 31.1.2007. Out of this, capacity addition during the 10th Plan upto 31.1.2007 is 4372 MW and the achievement during the said plan period is expected to cross 5400 MW.

2.3 The Budget Estimate, Revised Estimate and expenditure incurred under the Wind Power Programme during last three financial years is given below:

| Sl. No. | Year | BE (Rs.in cr.) | RE (Rs.in cr.) | Expenditure (Rs.in cr.) | Target (MW) | Achievement (MW) |
|---|---|---|---|---|---|---|
| **1.** | **2003-04** | **17.18** | **14.00** | **10.62** | **250** | **615** |
| **2.** | **2004-05** | **20.35** | **14.00** | **13.69** | **300** | **1111** |
| **3.** | **2005-06** | **16.00** | **6.01** | **5.68** | **450** | **1746** |

2.4 The Committee enquired about the reason for variation between BE and RE the Ministry informed: -

> "The reason for variation between BE and RE in 2003-04, 2004-05 and 2005-06 was on account of new components that were envisaged but were not approved for implementation and non submission of requisite documents by the state nodal agency for taking up wind demonstration

projects. During 2004-05 and 2005-06, the provision of demonstration wind power projects was limited to those states only where commercial development has not been initiated. Further, budgetary provision for C-WET was reduced at the RE stage."

2.5 The Ministry has informed that the response of the private developers in the potential states is extremely encouraging as evident from the growth of the sector during the 10th Plan. As already stated, wind power installed capacity during this period (2002-2007) was likely to cross 5400 MW as compared to 1627 MW set up upto the 9th Plan (2002).

2.6 When asked to state the measures, Government propose to take to further encourage private developers, the Ministry in a written reply stated as follows: -

"Grid-interactive wind power has exceeded the 10th Plan target by over 250% as a result of a host of fiscal concessions such as 80% accelerated depreciation, concessional duties and tax holiday for 10 years on profits earned through sale of generated power, preferential tariffs in most potential sites, technical support from C-WET for wind resource assessment, micro survey report preparation, testing and certification. No further concessions at this juncture are required for this sector, save for generation based incentives in lieu of accelerated depreciation for IPPs who might not be in a position to avail the existing benefit."

2.7 During evidence when asked about the number of people who had taken benefit for setting up wind projects and the total generation of wind energy, the Secretary stated before the Committee:

"We would definitely arrange to get this data but the fact remains that the data would further reveal that there is no direct correlation between capacity installation and the number of units generated. Even assuming a very low capacity factor of 20%, all the wind mills installed so far should have generated many more units than what they have generated.

We are not being unreasonable in saying that we all know that wind is seasonal and intermittent and generation will depend on wind. We have to average it out. Today, we are talking about 20% capacity utilisation factor against plant load factor for conventional and other plants of 80% or so.

If we take even the minimum end of it and calculate the number of units assuming wind would have prevailed, if I look at it analytically, it will probably reveal they could have generated more if it is shut down or gets

idle even when the wind is there. There is no way we are able to monitor that. So, the initiative should be rather with him than by way of a stick from me. That is what I am pleading, that is if they could have the incentive, let them generate."

2.8 Regarding the technology packages for Wind Energy Programme of this Ministry, the Ministry informed that the Ministry offers no technology packages. However, stall regulated and pitch regulated wind turbines are being deployed in this country. As is known, in stall regulated wind turbines, the angle of rotor blades is fixed whereas in pitch regulated wind turbines, it can be adjusted to optimize angle of attack for varying wind speeds. In addition, both gear and gearless WEGs are available. Each set claims it advantages and disadvantages.

2.9 The Ministry has also infomed in a written reply that in the past BHEL had taken initiative to design WEGs but discontinued their efforts in the wake of growing liberalization of imports of technology and capital equipment, since the early 1990s. Current production of WEGs in the country is largely based on licensed technology except for one major manufacturer reported to be carrying out most of its design activities in establishments overseas.

2.10 The Ministry submitted that RD&D on research, design, development for WEGs for low wind regimes for which Rs.100 crore has been proposed is to be taken up only during the 11th Plan. Since the manufacture of WEGs in the country is in market mode comprising, among others, subsidiaries of foreign companies and the current policy allows imports, relative advantages of higher levels of indigenisation would be dependent upon several factors, including economies of scale of manufacturing components within the country. In a globalised world, net foreign exchange earning, i.e., exports minus imports is considered a better indicator. About Rs.0.72 crore has been spent on R&D and related activities covering wind systems and small aerogenerators during 2001-06 onwards. In addition, R&D activities have been conducted through C-WET, which has spent about Rs.1.50 crores on various R&D projects. An amount of Rs.60 crores has been allocated for supporting R&D projects in the renewable energy sector, including wind energy, during 2007-08. The following thrust areas have been identified for the 11th plan: -

a) Facilitating research, design, development and manufacture of MW – scale Wind Electric Generators (WEGs) for low wind-regimes.

b) Facilitating design, development and manufacturing of small WEGs for low wind-regimes.

c) RD&D on materials used in MW scale WEG systems.

d) RD&D on high efficiency electronics for protecting, controlling, optimizing performance, power management & conversion and establishing connectivity with the grid to export and/or import power.

e) Component testing for RD&D purposes.

2.11 The Ministry informed that C-WET will be the lead agency for coordinating RD&D projects including those pertaining to the development of MW scale wind turbine for low wind regimes, component testing and development of standards.

2.12 During evidence regarding the wind turbine model which are existing in Europe and which are suitable to European conditions, the Secretary stated:

> "Strictly speaking, Sir, to some extent it is true the technology is not very much different. Considering the low wind regime that prevails in India, we should do more of research and get the equipment manufacturers to tap low wind regimes and also generate more of electricity. This would incentivise further investment even from the private sector and research and development of wind turbine. This is yet another benefit that will take place if incentive is linked to generation."

**2.13 The Committee note that the potential for wind power generation for both grid and off grid applications was estimated at about 45000 MW taking sites having wind power density greater than 200 W/Sq m at 50 m hub height assuming land availability in potential areas @ 1% and the requirement of setting up wind farms @ 12 ha/MW. The Committee also note that two-thirds of the wind potential lies in areas having a very modest wind regime. The wind capacity installed up to 31.01.2007 is 6315 MW only.**

**2.14 The Committee are unhappy to note poor utilisation of funds during the 10th Plan period. This has led the Ministry of Finance to reduce their budget every year at RE stage. The Committee consider it a very serious matter and desire that immediate corrective steps should be taken to ensure that in future all allocations are fully utilised. The Committee also note that 80% accelerated depreciation along with concessional duties and tax holidays for 10 years on profits earned are available to the wind power generators in the country to encourage private participation. However, the Committee are surprised to note that there is no direct co-relation between the capacity installation of wind power and the number of units generated. The Committee feel that although incentives and tax holidays need to be continued in the wind energy sector, however, these should be linked to the actual generation of power and its utilisation as grid interactive power or as power for local use in villages and hamlets near the actual sites. The Committee recommend that the Government needs to devise a mechanism to monitor the incentives along with the actual production and utilisation of wind power at the tail end. The Committee should be kept informed about the action taken in the matter.**

**2.15 The Committee also note that in the past very meagre allocations had been made for R&D sector and even then the Ministry has been unable to use all its funds for R&D and other related programmes of wind energy. As there is an urgent need to tap the wind resources in the low wind regimes, the Committee desire that there is a long pending requirement to undertake more and more R&D activities and develop WEGS for low wind regimes so that the available wind energy potential in the country can be tapped successfully to the fullest extent. The Ministry should also explore the possibility of getting wind technology from abroad and also study the different types of wind zones existing in India.**

## B. REMOTE VILLAGE ELECTRIFICATION PROGRAMME (RVE) & PROGRAMMES FOR RURAL ELECTRIFICATION

2.16 The Rajiv Gandhi Grameen Vidyutikaran Yojana of the Ministry of Power aims at electrification of un-electrified villages. Where grid connectivity is not being provided under the said scheme, such villages are being covered mainly with SPV home lighting systems under the Remote Village Electrification Programme of this Ministry. In line with the provisions of Rajiv Gandhi Grameen Vidyutikaran Yojana, a one light connection has been provided free of cost to BPL households. The Ministry have informed that responsibility for identification of villages/hamlets which are not to receive grid-connectivity under RGGVY has been entrusted to the Rural Electrification Corporation (REC), the implementing agency for the said Yojana. REC has so far identified 7496 villages/hamlets not to receive grid-connectivity under RGGVY, some of which are being disputed by some state governments. Details of the list of villages/hamlets furnished by REC are given below.

**List of the Remote Unelectrified Census villages /hamlets as verified by REC (as on 15.02.07).**

| S. No. | State | Number of Villages verified by REC |
|---|---|---|
| 1 | Karnataka | 70 |
| 2 | Madhya Pradesh | 411 |
| 3 | Assam | 1169 |
| 4 | Maharashtra | 257 |
| 5 | Meghalaya | 158 |
| 6 | Arunachal Pradesh | 145 |
| 7 | Himachal Pradesh | 24 |
| 8 | Rajasthan | 417 |
| 9 | Manipur | 57 |
| 10 | West Bengal | 88 |
| 11 | Gujarat | 49 |
| 12 | Orissa | 1018 |
| 13 | Jharkhand | 3113 |
| 14 | Chhatisgarh | 99 |
| 15 | Uttaranchal | 171 |
| 16 | Uttar Pradesh | 45 |
| 17 | Tamil Nadu | 73 |

| | | |
|---|---|---|
| 18 | Nagaland | 03 |
| 19 | Jammu & Kashmir | 02 |
| 20 | Haryana | 149 |
| | **Total** | **7518** |

2.17 The Ministry has further informed that the overall physical target of providing SPV home-lighting systems is 5000 villages for the 10th Plan, with a corresponding financial outlay of Rs.735 crore. Subsidy upto 90% of the normative cost of a SPV home-lighting system, including cost of AMC, is provided by the Ministry and its balance is to be financed by the state and/or contribution made by the beneficiary, or other sources such as MLA/MP LAD funds. However, it is necessary that at least 5% of the cost of the system is funded by the state government. In case of BPL households subsidy goes upto 100 per cent of the normative cost. So far subsidy has been provided to 5490 villages/hamlets under the Programme. No fund constraint has been experienced as far as this programme is concerned. 2000 remote villages / hamlets are proposed to be covered under the programme during 2007-08.

2.18 It is submitted by the Ministry that only SHP has shown promise of generation of cost-effective power on a kW scale. However, this resource is limited only to a few areas. Biomass gasification technology for power generation is still in demonstration phase and consequently has not yet attained maturity for deployment on a commercial scale. SPV power, although considered scale neutral, is uneconomical as it costs over Rs.30/kWh with battery back up. Accordingly, distributed generation under the Programme is rare and not the rule. The programme has thus been confined mainly to provision of SPV home lighting systems, which are required to be treated as an interim solution pending provision of a minimum lifeline electricity access of 1kWh/household/day as a part of the aim of `Power for All' through other means.

2.19 Regarding the aims of renewable energy for rural applications, the Ministry informed as follows: -

(i) Facilitating affordable energy solutions in rural areas.

(ii) Lighting of all remote villages/hamlets by 2012

(iii) Biogas from animal/poultry/human waste

2.20 Renewable Energy for Rural Applications as given by the Ministry:

| **Period** / **Prog. Component** | **Upto end of 9th Plan** | **10th Plan** | **11th Plan** | **By end of 11th Plan** |
|---|---|---|---|---|
| Remote Village Lighting | 341 village/hamlets | 5,000 villages/hamlets | 10,000(approx.) villages/hamlets | 15,000 villages/hamlets |
| Village Energy Security Test Projects | - | 100 villages | 100 villages | 200 villages |
| Biogas | 33 lakh plants | 5 lakh plants | 10 lakh plants | 48 lakh plants |

2.21 Demands for Grants for 2007-08 for Renewable Energy for Rural Applications

| **Programme Component** | **Physical Target** | **BE 2007-08 (Rs. in crore)** |
|---|---|---|
| <u>For remote villages / hamlets –</u> | | |
| Remote Village Lighting | 2000 villages / hamlets | 135.00 |
| Villages Energy Security Test Projects | 40 villages | 8.00 |
| <u>For all villages</u><br>Family Type biogas plants | 1.5 lakh plants | 36.00 |
| **Total** | | **179.00** |

2.22 During evidence, the Secretary stated in regard to all the major programmes in rural areas:

> "The other thing, which appears jarring in the light of grid interactive power, is what we have provided for as distributed of renewable power.

We talk about distributed system. It is not one system that we can install. Most of the grid power we will see would be from either wind or biomass. Here, probably, we will have to go in for biomass combined with hydel or combined with gas generated power, and along with distribution network for the entire rural India. Though cost seems to be high, we are doing this only in the areas where we can never take the grid power. It can never be a substitute for grid power. But this is the only option that is available.

…… regarding biogas part of it; Rs.36 crore gives 1.5 lakh plants whereas in remote village lighting, it is Rs.135 crore which gives lighting for 2000 villages. If you just switch it over, you can just switch it over at the moment. As far as biogas is concerned, there is a limitation in the capacity mostly in the public sector. We find it, and people can set it up. There is availability of cow dung as well, there is availability of the waste in the village areas. I fully take the point of the Hon'ble MP can we look at the cost effective options and increase expenditure on that? I fully take their suggestions in a good spirit and we will try to work it out again."

**2.23 The Committee note that the responsibility for identification of villages and hamlets which are not to receive grid connectivity under RGGVY has been entrusted to the Rural Electrification Corporation (REC). The REC as so far identified 7496 villages / hamlets through some are disputed by some State Governments. The Committee feel that in view of the above no head way appears to have been made in the Rural Electrification Programmes. The Ministry of New and Renewable Energy rather than relying totally on REC for identification of villages and hamlets which are not to receive grid connectivity under RGGVY, should take up some sort of survey work of their own to identify potential villages to be electrified through renewable energy. The Committee, therefore, desire that the Ministry must take effective steps for identification of inaccessible areas for electrification by renewable energy. The Committee desire that apart from meeting the needs of home lighting systems under this scheme, all out efforts should be made to meet the other energy needs of such villages like cooking and motive power through locally available resources.**

**2.24 The Committee take note of the fact that a large amount of work is to be undertaken for remote village lighting, village energy security test projects, biogas projects, etc. in the 11$^{th}$ Plan period. The Committee desire that adequate funds may be made available for these small yet significant rural programmes so that the population living in rural areas can take maximum benefit of the programmes and schemes initiated by the Ministry of New and Renewable Energy.**

**2.25 The Committee note that work has been commenced on test projects in remote villages and hamlets to meet their energy needs. The first test project has been commissioned at Kasai village, Batual district Madhya Pradesh on October 2005. The Committee desire that such projects should be started in these villages in a time bound manner for which a schedule should be drawn up. The Committee should be informed of the same.**

**The Committee desire that a detailed study should be made as to how many systems were installed during the last three years and how many are functional. The targets relating to the same should be fixed so that work is executed timely.**

## C. BIOMASS POWER & CO-GENERATION PROGRAMME

2.26 Three sets of programmes are being implemented with the aim to generate competitively priced bio-power and / or heat from agricultural, agro-industrial and forestry residues / wastes. These are biomass power / bagasse cogeneration programme, biomass energy and cogeneration (non-bagasse) in industry and biomass gasifier programme. The aim is to add 3% grid-interactive power generating installed capacity through these three programmes.

2.27 The current potential of surplus agro and forestry residues to energy is estimated at 16,000 Mwe, not all of which might be technically feasible and economically viable. In practice biomass power generation units prefer to use fuel-wood for techno-economic reasons. With new sugar mills and modernisaiton of existing ones, the potential of bagasse generation is estimated at 5000 Mwe. Furthermore, several sugar companies/cooperatives are unable to develop bankable projects on account of their financial position.

**Capacity Installed:**

2.28 The cumulative installed capacity of grid interactive biomass and bagasse cogeneration power projects up to 31.03.2006 was 912 MW. During the year 2006-07, 190 MW has been installed up to 31.12.2006 and total installed capacity up to March 2007 would be around 220 MW.

2.29 The physical and Financial targets for the Biomass Co-generation Programme of the Ministry of New and Renewable Energy for the last three years are given below:

A. PHYSICAL (in MW)

| **Programme** | **Tenth Plan** | | | | | |
|---|---|---|---|---|---|---|
| | **2003-04** | | **2004-05** | | **2005-06** | |
| | Target | Ach. | Target | Ach. | Target | Ach. |
| Biomass Power/cogeneration Programme | 125 | 129.50 | 125 | 36.10 | 160 | 163 |

B. FINANCIAL (in Crores of Rupees)

| Progra-Mme | Tenth Plan | | | | | |
|---|---|---|---|---|---|---|
| | 2003-04 | | 2004-05 | | 2005-06 | |
| | BE/RE | Ach. | BE/RE | Ach. | BE/RE | Ach. |
| Biomass Power/ cogeneration Programme | 18.00/16.50 | 11.95 | 14.54 / 12.54 | 6.22 | 9.00 / 5.10 | 5.10 |

2.30 The variations in financial achievement during the last three years have occurred due to the following reasons as stated by the Ministry:

> "Difference in actual expenditure and BE/RE figures during 2003-04 was because releases to several mature biomass power/cogeneration projects were withheld due to cancellation of some PPAs as the matter was referred to the regulators. The position remained the same during 2004-05, as the issue was pending resolution. Projects could only be approved by the end of 2005-06 after the PPA issue was resolved."

2.31 The overall physical and financial targets for the 11th Plan and for the 2007-08 are as follows:

| | Target (11th Plan) (proposed) | Target 2007-08 |
|---|---|---|
| Physical (MW) | 1700 | 200 MW |
| Financial (Rs. In crore) | 800 | 40.00 |

**Incentives**

2.32 A package of incentives which includes fiscal concessions such as accelerated depreciation, concessional custom duty, excise duty exemption, sales tax exemption, income tax exemption on projects for biomass power generation for 10 years etc. are available. The State Electricity Regulatory Commissions (SERC) of Andhra Pradesh, Karnataka, Maharashtra and Uttar Pradesh have announced preferential tariff.

Since December 2006, capital subsidy in lieu of interest subsidy is being provided through concerned financial institutions after the project has been successfully commission.

2.33 When asked to State the major constraints being faced by private developers, the Ministry informed as follows:

> "- No firm assessment on availability of surplus biomass.
> - Interrupted supplies of biomass, especially during monsoons.
> - Steep price variations in supply.
> - Technical and operational problems arising out of multi fuel mix combustion.
> - Uncertainty associated with tariffs fixation in some potential states.
>
> A Biomass Resource Atlas for India has been prepared for surplus agro residues which has been placed on the website of the Indian Institute of Science, Bangalore, which is expected to address the issue of firmly assessing surplus agro residue availability. In so far as technical and operational problems are concerned, these are sought to be addressed through support to industry through higher levels of RD&D."

2.34 When asked to state how much funds were allocated and utilized during 10th Plan for biomass R&D, the Ministry gave the following information: -

**(Rs. in crores)**

| **S.No.** | **Year** | **Funds allocated (BE/RE)** | **Funds utilized (Actual)** |
|---|---|---|---|
| 1. | 2002-03 | 6.80/3.30 | 3.74 |
| 2. | 2003-04 | 4.00/2.60 | 2.60 |
| 3. | 2004-05 | 6.00/2.30 | 2.46 |
| 4. | 2005-06 | 4.00/0.85 | 0.71 |
| 5. | 2006-07 | 1.70/0.70 | 0.70* (likely) |

* Expenditure up to January, 2007: Rs.0.04 crore

2.35 The thrust areas for R&D support on biomass power / cogeneration and gasification as specified by the Ministry include:

(a) Trouble free firing of different biomass materials, including blending with conventional fuels (co-firing) in industrial boilers;

(b) better operation techniques for obtaining high plant load factors in biomass power plants;

(c) More efficient handling and feeding of biomass.

(d) Biomass storage techniques to prevent degradation and for fire safety.

(e) Development of fludized bed gasification systems especially for low capacities.

(f) Development of a multi-biomass gasification system.

(g) Development of cost-effective engines for 100% producer gas operation in kW range.

(h) Development of applications such as direct gas fired absorption chillers for cold storage, industrial drying, grain dryers, absorption type air conditioners, etc.

(i) Biomass Integrated Gasification Combined Cycle (IGCC) sytems.

(j) Raising efficiency of low capacity (1-25 MW)atmospheric gasification power generation systems to 25-30%, along with safe disposal of wastes.

(k) Raising efficiency of small (kW to 1 MW) combustion and turbine technologies to 20% plus.

2.36 The Ministry has further informed that under the R&D head an increased allocation of Rs.60.00 crore has been made for research, design and development activities in new & renewable energy, including Bio-energy for 2007-08.

**2.37 The Committee note that the Biomass Power and Co-generation Programme of the Ministry is being implemented since last few years. However, there has been a gap between the physical and financial targets of the programme. The Committee are unhappy to note that the physical and financial targets under the programme had not been achieved during various years of the 10th Five Year Plan due to cancellation of some PPAs. The Committee also note that the developers of biomass power face certain problems like non-assessment of surplus biomass, interrupted supplies of biomass, especially during monsoons, steep price variations in supply, technical and operational problems and uncertainty associated with tariffs fixation in some potential States.**

**2.38 The Committee desire that these problems should be resolved in consultation with private developers and if necessary, with the State Governments as well so that private investment can come in this sector. The Committee further note that a Biomass Resource Atlas for India has been prepared for surplus agro residues which has been placed on the website of the Indian Institute of Science, Bangalore, which is expected to address the issue of firmly assessing surplus agro residue availability. The Committee have also been informed that the thrust areas for R&D support on biomass power / co-generation and gasification have been identified and an increased allocation has been made for the same.**

**2.39 The Committee also desire that R&D efforts should be stepped up to improve biomass gasification technologies to give a better result in power generation. A time schedule should be fixed to complete the identified projects so that this sector can be made more commercially viable and huge potential can be tapped. The Committee also desire that R&D should be related to standardisation of machines, their maintenance, working and on the whole the institutional set up required to ensure working of the various systems under biomass gasification programme.**

**2.40 The Government should also examine as to how far various incentives have been able to attract the private investment in this sector. The Committee desire that these incentives should be linked with actual generation of power and not merely on creation of infrastructure etc.**

## D. SOLAR POWER PROGRAMME

2.41 The main objective of the Solar Energy Programme during the 10th Plan period was to facilitate (i) R&D on solar energy materials/components/systems to improve performance and reduce costs, (ii) deployment of solar energy systems for supplementing heat requirements with a view to conserve fossil fuels / electricity, and (iii) limited demonstration for extension purposes of SPV systems / devices in electrified areas.

2.42 During the 10th Plan, 1.13lakh SPV home-lighting systems and around 67,000 solar lanterns have been deployed in special category states and tsunami affected areas. 1177 $kW_p$ capacity stand alone systems including power plants and 2568 SPV pumping systems have also been installed. Grid-interactive SPV power plants with an aggregate capacity of 0.9$MW_p$ were installed till 2004-05. No new such plants have been supported since 2004-05 on account of the uneconomic cost of solar power generation, currently placed at around Rs.20 /kWh.

2.43 Year-wise details of the physical and financial targets and achievements are given below:

**Physical**
**Solar Photovoltaic Systems**

| Item / Year | 2002-03 | | 2003-04 | | 2004-05* | | 2005-06 | | 2006-07+ | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | T | A | T | A | T | A | T | A | T | A | T | A |
| | | | | | | | | | | | | |
| **Solar Home Lighting (No)** | 50000 | 28430 | 50000 | 11870 | 0 | 34844 | 42000 | 19727 | 60000 | 18969 | 202000 | 113840 |
| | | | | | | | | | | | | |
| **Solar Lantern (No)** | 40000 | 13797 | 0 | 0 | 15000 | 21577 | 100000 | 885 | 30000 | 31000 | 185000 | 67259 |
| | | | | | | | | | | | | |
| **Power plants & street lights (kWp)** | 275 | 286 | 450 | 445 | 0 | 142.7 | 350 | 27.52 | 400 | 275.25 | 1475 | 1176.47 |
| | | | | | | | | | | | | |
| **Solar Pumps (No)** | 1200 | 1073 | 1600 | 841 | 0 | 366 | 500 | 222 | 300 | 66 | 3600 | 2568 |
| | | | | | | | | | | | 0 | 0 |
| **Grid power plant (kWp)** | 750 | 500 | 750 | 50 | 0 | 325 | 0 | 25 | 0 | 0 | 1500 | 900 |

* No targets were allocated to the implementing agencies in 2004-05 and the 2003-04 programme was allowed to be continued.

+ Achievements are as on 31.1.2007. Reports from many states are awaited

**Solar Thermal Energy**

| Item / Year | 2002-03 | | 2003-04 | | 2004-05 | | 2005-06 | | 2006-07+ | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | T | A | T | A | T | A | T | A | T | A | T | A |
| | | | | | | | | | | | | |
| **Solar cookers (no)** | 35000 | 18952 | 30000 | 17562 | 30000 | 22478 | 20000 | 19938 | 20000 | 1999 | 135000 | 81829 |
| | | | | | | | | | | | | |
| **Solar water heating systems (sq. m.)*** | 50000 | 45000 | 55000 | - | 100000 | 150000 | 400000 | 400000 | 600000 | 165000 | 1205000 | 761000 |

+ Up to 31/1/2007

**Financial**
**Solar Photovoltaic**

| Budget / Expenditure | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07* |
|---|---|---|---|---|---|
| Budget Estimate | 92.00 | 78.00 | 39.00 | 38.50 | 39.70 |
| Revised Estimate | 80.00 | 69.10 | 66.00 | 34.65 | 62.45 |
| Actual Expenditure | 74.30 | 63.92 | 21.45 | 34.44 | 27.37 |

* As on 31.1.2007

**Solar Thermal Energy**

| Budget / Expenditure | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07* |
|---|---|---|---|---|---|
| Budget Estimate | 11 | 12.90 | 15.30 | 52.90 | 46.75 |
| Revised Estimate | 10 | 10.65 | 13.15 | 26.10 | 13.59 |
| Actual Expenditure | 9.73 | 10.63 | 7.36 | 26.29 | 8.50 |

2.44 During the last three years a total of Rs. 9.15 crore were allocated for the R&D on solar energy and an amount of Rs. 1.67 lakh was spent. During 2007-08, an amount of Rs. 8.0 crore has been proposed for R&D in solar energy. This amount is expected to be sufficient to support research projects envisaged in this area.

2.45 RD&D activity globally and in this country is aiming to make solar power generation competitive. Although no definite date can be ascribed for attainment of this aim, it is generally considered that solar power might become competitive or near competitive by 2030, depending upon technological breakthroughs and the relative cost of deploying conventional fuel systems in the future. An amount of Rs.400 crore has been proposed for RD&D on solar energy during the 11th Plan, with the aim of making the Solar Energy Centre into an institution of excellence in the area.

2.46 Regarding the technologies in the solar energy field the Secretary informed the Committee during evidence: -

> "On the silicon technology use, we do have alternate materials. It is not that they are not there. We have gallium arsenide, we have copper indium selenide and a lot of research is going on regarding thin films technologies which are coming. Today you will be happy to know that by the end of this year we will have an additional 100 MW capacity of solar cell production in India. Tata BP Solar is commissioning about 37 MW by the end of this month. Moser Baer is commissioning another 80 MW, 40 MW now and 6 months later another 40 MW and they have also tied up with a group called Applied Materials who are into thin films technologies. They are also investing in research and we are also talking to the Australians simultaneously who have done a lot of work on gallium arsenide. We are quite open to all new materials which can be used in solar photovoltaic zones."

2.47 It is submitted that a decision has been taken not to support deployment of SPV systems/devices in electrified or to be electrified areas as it leads to duplication of efforts apart from sub-optional utilization of scarce national financial resources. Accordingly, extension on a limited scale will be carried out during the 11th Plan covering the following:

i) Street/garden lights.

ii) Traffic signals/Road studs/Blinkers.

iii) Solar control systems for automatic switching off/ on of street lights during evenings/mornings.

2.48 During 2005-06 and 2006-07, 31,000 solar lanterns have been distributed. Progress reports from some states are still awaited. From 2007-08 onwards all unelectrified villages/hamlets would be serviced only by the Remote Village Lighting Programme under which a subsidized SPV home-lighting system is to be provided.

**2.49 The Committee note that the Solar Energy Programme of the Ministry during the 10th Plan period was to facilitate (i) R&D on solar energy materials (ii) deployment of solar energy systems for supplementing heat requirements and (iii) limited demonstration for extension purpose of SPV systems and devices. The Committee note that have been huge variations in physical and financial targets and actual expenditure has been lower than the Budget Estimates and Revised Estimates. Even in the R&D a substantially lower amount had been spent on the solar energy research front. Not much appears to have been done in reducing the cost of solar power. The Committee desire that time bound targets should be fixed to put up solar street lights, traffic signals and other eco-logical friendly devices in the 11th Plan.**

**2.50 The Committee note that R&D activity in this country as well as globally aim to make solar power more competitive in the near future. An amount of Rs.400 crore has been proposed in the solar R&D in the 11th Plan which has the aim of making the Solar Energy Centre an Institution of excellence. The Committee desire that a time schedule should be drawn up to carry forward the research in identified areas in this field so that it can be made economically viable and made use of at mass level. The Committee desire that the latest technology in the field of R&D should be adopted so that there is cost effectiveness by increasing the number of users. The Committee also desire that various IITs and other scientific institutions should also be asked to take up research work in the solar energy field.**

**NEW DELHI;**
**16 April, 2007**
**26 Chaitra, 1929 (Saka)**

**GURUDAS KAMAT,**
**Chairman,**
**Standing Committee on Energy**

## STATEMENT OF CONCLUSIONS/RECOMMENDATIONS OF THE STANDING COMMITTEE ON ENERGY CONTAINED IN THE REPORT

| Sl. No. | Reference Para No. of the Report | Conclusions/Recommendations |
|---|---|---|
| 1. | 1.12 | The Committee are concerned to note that there has been a downward trend in the utilisation of funds by the Ministry of New and Renewable Energy from the year 2003-04 onwards. Similarly, there has been a trend of cutting the budget of the Ministry by the Ministry of Finance at RE stage from the year 2003-04 onwards. Last year also a similar trend was noticed in the expenditure of the Ministry. Against a BE of Rs.603.64 crore, the RE for same year stood at Rs.386.57 crore. The actual expenditure up to February 2007 as informed by the Ministry was Rs.255.32 crore. The Committee note that the Ministry failed to make adequate expenditure in the first and second quarter of the financial year (Rs.36.72 crore and Rs.4.42 crore) resulting in a cut at the RE stage. |
| 2. | 1.13 | The Committee note that the main reasons specified by the Ministry for a lower actual expenditure during the year were on account of the fact that progress in incurring expenditure in the Remote Village Electrification Programme started suffering from 2003-04 onwards, when Finance Ministry raised the issue that Cabinet approval had not been taken without taking cognizance of the fact that the resolution under which the Commission for Additional Sources of Energy (CASE) was formed, clearly spelt out that this Commission had both appraisal and approval power within the allocated budget. Similarly, problems were faced with programmes whose $10^{th}$ Plan outlay exceeded Rs.50 crore. As per the subsidy scheme also for small hydro, biomass, bagase cogeneration etc., the subsidy could not be released. Another reasons specified by the Ministry for non-utilisation of the funds was that REC (Rural Electrification Corporation), the implementing agency for RGGVY had been unable to furnish lists of remote villages and hamlets until late 2006-07. The Ministry has further informed that R&D appraisal mechanism could be put in place only in December 2006, because the entire issue of R&D had to be re-examined due to certain reasons. |

| | | |
|---|---|---|
| 3. | 1.14 | The Committee, however, feel that the Ministry has taken too long a period to resolve various problems which are only administrative in nature. The Committee, therefore, desire that such problems should be attended to within the financial year in which these are encountered. The Committee hope that the expenditure position would improve in the year 2007-08 as the obstacles encountered in the clearance and approval of schemes by way of dismantling of CASE and direct financial approval at the appropriate level by the Ministry of Finance would prove an effective method to check expenditure and streamline the procedures. The Committee feel that the rationalisation and simplification of the programmes / schemes for the 11th Plan commencing 2007-08 would help the Ministry in achieving both physical and financial targets. The Committee also hope that expenditure position would also improve by deputation of a zonal officer in each State to facilitate processing of schemes and zonal meetings to be chaired by Secretary, MNRE introduced in 2006-07 to be made more periodic. The Committee hope that they will be able to utilise all the funds allocated to the Ministry judiciously and expeditiously in the year 2007-08. |
| 4. | 1.15 | The Committee further desire that while developing various sources of new and renewable energy, cost effectiveness of the source should be kept in mind by making a cost-benefit analysis. For example, with an investment of 36 crore, 1.5 lakh of family type Biogas plants can be provided. So the basic idea should be to add maximum MW at least cost. |
| 5. | 1.16 | The Committee are also of the view that the Ministry should lay special emphasis on development of small hydel power projects in the North-East and Himachal Pradesh etc. where a lot of potential exists. Small hydel power projects do not involve a lot of displacement of people or disturbe the eco – system of thearea and can be developed in a short time. The Ministry should carry out techno-economic feasibility study to identify small hydel potential in various States on canals like projects on Indira Gandhi Canal in Rajasthan, Punjab and Haryana. |
| 6. | 1.17 | At the same time the Committee desire that other areas should not be totally neglected. The Committee desire that research and development in all the areas should be continued to be done. The Government should provide 100% subsidy for R&D activities and the Ministry should ensure that the amount allocated is fully utilised in identified key areas where research is required. The Committee also desire that more research needs to be carried out on tidal projects. |
| 7. | 2.13 | The Committee note that the potential for wind power generation for both grid and off grid applications was estimated at about 45000 MW taking sites having wind power density greater than 200 W/Sq m at 50 m hub height assuming land availability in potential areas @ 1% and the |

| | | |
|---|---|---|
| | | requirement of setting up wind farms @ 12 ha/MW. The Committee also note that two-thirds of the wind potential lies in areas having a very modest wind regime. The wind capacity installed up to 31.01.2007 is 6315 MW only. |
| 8. | 2.14 | The Committee are unhappy to note poor utilisation of funds during the 10th Plan period. This has led the Ministry of Finance to reduce their budget every year at RE stage. The Committee consider it a very serious matter and desire that immediate corrective steps should be taken to ensure that in future all allocations are fully utilised. The Committee also note that 80% accelerated depreciation along with concessional duties and tax holidays for 10 years on profits earned are available to the wind power generators in the country to encourage private participation. However, the Committee are surprised to note that there is no direct co-relation between the capacity installation of wind power and the number of units generated. The Committee feel that although incentives and tax holidays need to be continued in the wind energy sector, however, these should be linked to the actual generation of power and its utilisation as grid interactive power or as power for local use in villages and hamlets near the actual sites. The Committee recommend that the Government needs to devise a mechanism to monitor the incentives along with the actual production and utilisation of wind power at the tail end. The Committee should be kept informed about the action taken in the matter. |
| 9. | 2.15 | The Committee also note that in the past very meagre allocations had been made for R&D sector and even then the Ministry has been unable to use all its funds for R&D and other related programmes of wind energy. As there is an urgent need to tap the wind resources in the low wind regimes, the Committee desire that there is a long pending requirement to undertake more and more R&D activities and develop WEGS for low wind regimes so that the available wind energy potential in the country can be tapped successfully to the fullest extent. The Ministry should also explore the possibility of getting wind technology from abroad and also study the different types of wind zones existing in India. |
| 10. | 2.23 | The Committee note that the responsibility for identification of villages and hamlets which are not to receive grid connectivity under RGGVY has been entrusted to the Rural Electrification Corporation (REC). The REC as so far identified 7496 villages / hamlets through some are disputed by some State Governments. The Committee feel that in view of the above no head way appears to have been made in the Rural Electrification Programmes. The Ministry of New and Renewable Energy rather than relying totally on REC for identification of villages and hamlets which are not to receive grid connectivity under RGGVY, should take up some sort of survey work of their own to identify potential villages to be electrified through renewable energy. The Committee, therefore, desire that the |

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| | | Ministry must take effective steps for identification of inaccessible areas for electrification by renewable energy. The Committee desire that apart from meeting the needs of home lighting systems under this scheme, all out efforts should be made to meet the other energy needs of such villages like cooking and motive power through locally available resources. |
| 11. | 2.24 | The Committee take note of the fact that a large amount of work is to be undertaken for remote village lighting, village energy security test projects, biogas projects, etc. in the 11th Plan period. The Committee desire that adequate funds may be made available for these small yet significant rural programmes so that the population living in rural areas can take maximum benefit of the programmes and schemes initiated by the Ministry of New and Renewable Energy. |
| 12. | 2.25 | The Committee note that work has been commenced on test projects in remote villages and hamlets to meet their energy needs. The first test project has been commissioned at Kasai village, Batual district Madhya Pradesh on October 2005. The Committee desire that such projects should be started in these villages in a time bound manner for which a schedule should be drawn up. The Committee should be informed of the same.<br>The Committee desire that a detailed study should be made as to how many systems were installed during the last three years and how many are functional. The targets relating to the same should be fixed so that work is executed timely. |
| 13. | 2.37 | The Committee note that the Biomass Power and Co-generation Programme of the Ministry is being implemented since last few years. However, there has been a gap between the physical and financial targets of the programme. The Committee are unhappy to note that the physical and financial targets under the programme had not been achieved during various years of the 10th Five Year Plan due to cancellation of some PPAs. The Committee also note that the developers of biomass power face certain problems like non-assessment of surplus biomass, interrupted supplies of biomass, especially during monsoons, steep price variations in supply, technical and operational problems and uncertainty associated with tariffs fixation in some potential States. |
| 14. | 2.38 | The Committee desire that these problems should be resolved in consultation with private developers and if necessary, with the State Governments as well so that private investment can come in this sector. The Committee further note that a Biomass Resource Atlas for India has been prepared for surplus agro residues which has been placed on the website of the Indian Institute of Science, Bangalore, which is expected to address the issue of firmly assessing surplus agro residue availability. The Committee have also been informed that the thrust areas for R&D support on biomass power / co-generation and gasification have been identified |

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| | | and an increased allocation has been made for the same. |
| 15. | 2.39 | The Committee also desire that R&D efforts should be stepped up to improve biomass gasification technologies to give a better result in power generation. A time schedule should be fixed to complete the identified projects so that this sector can be made more commercially viable and huge potential can be tapped. The Committee also desire that R&D should be related to standardisation of machines, their maintenance, working and on the whole the institutional set up required to ensure working of the various systems under biomass gasification programme. |
| 16. | 2.40 | The Government should also examine as to how far various incentives have been able to attract the private investment in this sector. The Committee desire that these incentives should be linked with actual generation of power and not merely on creation of infrastructure etc. |
| 17. | 2.49 | The Committee note that the Solar Energy Programme of the Ministry during the 10$^{th}$ Plan period was to facilitate (i) R&D on solar energy materials (ii) deployment of solar energy systems for supplementing heat requirements and (iii) limited demonstration for extension purpose of SPV systems and devices. The Committee note that have been huge variations in physical and financial targets and actual expenditure has been lower than the Budget Estimates and Revised Estimates. Even in the R&D a substantially lower amount had been spent on the solar energy research front. Not much appears to have been done in reducing the cost of solar power. The Committee desire that time bound targets should be fixed to put up solar street lights, traffic signals and other eco-logical friendly devices in the 11$^{th}$ Plan. |
| 18. | 2.50 | The Committee note that R&D activity in this country as well as globally aim to make solar power more competitive in the near future. An amount of Rs.400 crore has been proposed in the solar R&D in the 11$^{th}$ Plan which has the aim of making the Solar Energy Centre an Institution of excellence. The Committee desire that a time schedule should be drawn up to carry forward the research in identified areas in this field so that it can be made economically viable and made use of at mass level. The Committee desire that the latest technology in the field of R&D should be adopted so that there is cost effectiveness by increasing the number of users. The Committee also desire that various IITs and other scientific institutions should also be asked to take up research work in the solar energy field. |

**Annexure – I**

## ANALYSIS OF DEMANDS FOR GRANTS OF THE MINISTRY OF NEW AND RENEWABLE ENERGY UTILISATION OF PLAN OUTLAY

The following table indicate the position of targets / achievements under various programmes of the Ministry of New and Renewable Energy during the last 4 years:

| S. No. | Name of the Scheme / Project / Programme / Power from Renewables | Units | 2003-04 | | 2004-05 | | 2005-06 | | 2006-07 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Target | Achievements | Target | Achievements | Target | Achievements | Target | Achievements |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. | Wind power | MW | 250.00 | 615.25 | 300.00 | 1111.55 | 450.00 | 1716.200 | 1000.00 | 933.00 |
| 2. | Small Hydro (upto 25 MW) | MW | 80.00 | 84.04 | 100.00 | 102.31 | 130.00 | 120.800 | 160.00 | 69.10 |
| 3. | Biomass Power / Cogeneration | MW | 125.00 | 129.50 | 125.00 | 136.10 | 160.00 | 163.000 | 215.00 | 215.30 |
| 4. | Biomass Gasifier | MW | 5.00 | 4.85 | 10.00 | 8.25 | 10.00 | 9.520 | 2.00 | 1 |
| 5. | SPV Power | MW | 0.75 | 0.05 | 0.00 | 0.03 | 0.00 | 0.025 | | 0 |
| 6. | Waste to Energy Programme | MW | 10.00 | 15.65 | 10.00 | 8.00 | 10.00 | 1.750 | 30.00 | 13.67 |
| | Total | | 470.75 | 849.34 | 545.00 | 1366.24 | 760.00 | 2011.295 | 1407.00 | 1232.07 |
| 7. | Village Electrification Programme | | 1000.00 | 613.00 | 3000 | 381 | 2000 | 293.000 | 1000.00 | 264 villages + 236 hamlets |
| 8. | Biogas Plants | Nos. in lakhs | 1.49 | 1.41 | 1.00 | 1.09 | 0.66 | 0.610 | 0.50 | 0.43 |
| 9. | Solar Photovoltaic Programme (SPV) | | | | | | | | | |
| | SPV Home Light | Nos. | 50000.00 | 11870.00 | 0 | 34844 | 42000 | 9727.000 | 60000 | 10000 |
| | SPV Lanterns | Nos. | 0.00 | 0.00 | 15000 | 21577 | 100000 | 885.000 | 30000 | 20000 |
| | SPV Streets Lighting Systems | Nos. | 0.00 | 4133.00 | 0 | 1650 | 0 | 367.000 | 1250 | 1000 |
| | SPV Power Plants | KWp | 450.00 | 139.70 | 0 | 79.7 | 350 | 0.000 | 400 | 0 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10. | SPV Pumps | Nos. | 1600.00 | 841.00 | 0 | 366 | 500 | 222.000 | 300 | 66 |
| 11. | Solar Thermal Energy Programme | | | | | | | | | |
| | Solar Water Heating System | m2 collector area | 55000.00 | 0.00 | 100,000 | 150,000 | 400,000 | 400000 | 400000 | 1.65 |
| | Solar Cooker | Nos. | 35000.00 | 5000.00 | 35,000 | 20,000 | 35,000 | 19769 | 22000 | 1537 |
| 12. | Wind Pumps | Nos. | 150.00 | 80.00 | 100 | 47 | 100 | 96 | 100 | 30 |
| 13. | Hybrid System | kWp | 150.00 | 122.60 | 150 | 40 | 150 | 99.040 | 150 | 88 |

1.2 The outlays, outputs and outcomes for 2007-08 for the major programmes are shown in the table given below:

| **Sl. No.** | **Name of the Scheme / Programme** | **Objective / Outcome** | **Outlay 2007-08 (BE)** (Rs. in crore) | **Ouantifiable Deliverables / Physical Outputs** |
|---|---|---|---|---|
| **I.** | **Grind-Interactive Renewable Power** | | | **Installed Capacity (in MW)** |
| | Wind Power | Supplement conventional power | 5.0 | 1500 |
| | Small Hydro Power | | 30.0 | 200 |
| | Biomass Power / Cogeneration | | 40.0 | 250 (equivalent) |
| | Urban Waste to Power | | 10.0 | 25 |
| | Industrial Waste to Power | | 5.0 | 25 |

**Annexure – II**

1.1 The detailed Demands for Grants (2006-07) of the Ministry of Non-Conventional Energy Sources are as follows:

(Rs. in crore)

| | **Revenue** | **Capital** | **Total** |
|---|---|---|---|
| | 568.65 | 64.25 | 632.90 |

| Sl. No. | Major Heads | Programme Scheme | Revenue Section | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2005-06 | | 2006-07 | | | | 2007-08 | | |
| | | | **Actual** | | **BE** | | **RE** | | **BE** | | |
| | | | Plan | Non-Plan | Plan | Non-plan | Plan | Non-Plan | Plan | Non-Plan | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1. | 3451 | Secretariat Economic Services | 6.46 | 5.52 | 10.50 | 6.64 | 10.50 | 6.57 | 10.50 | 6.81 | This Head comprises wages, O.T.A., Domestic & Foreign Travel Expenses, Office Expenses, Rent, Rates Taxes, Publications, other Administrative Expenses, Advertising & Publicity, Professional Service, Commission for Additional Sources of Energy, Regional Office. |
| 2. | 2501 | Special Programme for Rural Development | 33.52 | -- | 1.50 | -- | 0.30 | -- | 0.10 | -- | This Programme includes IREP Programme, Grants-in-aids for National & Regional Training Centre. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3. | 2552 | Lumpsum provision for North-Eastern Region and Sikkim | -- | -- | 60.00 | -- | 43.10 | -- | 62.80 | -- | Lumpsum provision forn North-Eastern Region and Sikkim. |
| 4. | 2810 | Non-Conventional Sources of Energy | 238.41 | -- | 436.00 | -- | 252.69 | -- | 469.90 | 0.09 | This Head comprises R&D Non-Conventional Energy Sources, Bio-Energy assistance to Biomass Programme, National Programme for Biogas, Energy from Urban Municipal Waste, Energy from Industrial Waste, Small Hydro Power Development, SHP Promotion Programme, UNDP/GEF Hilly Hydro Projects, Chemical Sources of Energy, Alternative Fuel for Surface Transportation, Hydrogen Energy, Ocean Energy, National Institute of Renewable Energy, Special Area Demonstration Project, North—Eastern States/State Nodal Agencies, Dutch/ SDC Grants to IREDA, Lumpsum Provision for North-Eastern States including Sikkim, UNDP Rural Energy Support Programme, Rural Energy Entrepreneurship, Institutional Development, Technology Commercialisation Fund, |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Village Electrification Programme, Women and Renewable Energy Development, National Project on Clean Energy Services for Rural Areas, TIFAC, DEB Management System, Information and Public Programme, International Cooperation. |
| 5. | 3601 | Grants-in-aid to State Government | 8.40 | -- | 23.06 | -- | 18.21 | -- | 14.90 | -- | This Head includes Grants-in-aids to State Governments for Small Hydro Power Programme, Wind Energy Grants for Central Sponsored Plan Schemes for Bio-Energy, Development, Advertising & Publicity, Community and Institutions, Biogas Development, Biomass Briquetting, Energy Plantation, Biomass Gasifier for Stand Alone Application, National Bio-Energy Board, Biomass Cogeneration and Combustion, Grid Connection Gasifier, Animal Energy Programme, Solar Passive Architecture, Regional Technical Back-up Units Training Programme, Solar Energy Centre, Inter-active Research with other Institutions/ Organisations, Professional Service, SPV |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Pump Programme, Solar Thermal Power Generation Grid connected ASPV Power Projects, GEF Grants for IS Project, Assistance to Wind Power Generation Programme, Assistance to Wind Power Programme, Wind Energy Centre, Wind Resources Assessment, National Programme on Improved Choolah, Women and Renewable Energy Development, Energy from Urban and Agricultural Wastes, National Programme for Biogas Development, Community and Institutional Biogas Development, Solar Thermal Energy Programme, National Programme on Improved Chulhas, Energy from Urban & Agriculture Wastes, Integrated Rural Energy Planning Programme, Monitoring, Lumpsum provision for North-Eastern States including Sikkim. |
| 6. | 3602 | Grants-in-aid to Union Territory Government | 0.5 | -- | 0.69 | -- | 0.16 | -- | 3.55 | -- | This Head includes Grants for Central Plan Schemes for Wind Demonstrations, Grant for Centrally Sponsored Plan Scheme for NPB Community and Institutional Biogas Development, Solar Thermal |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Energy Programme, National Programme on Improved Chulhas, Integrated Rural Energy Programme Monitoring, National Project on Clean Energy Services for Rural Areas. |
| 7. | -- | Total Revenue | 253.66 | 5.52 | 531.75 | 6.64 | 324.96 | 6.57 | 561.75 | 6.90 | ---- |
| 8. | 4810 | Capital Outlay on Non-conventional Sources of | 24.70 | -- | 50.25 | -- | 40.04 | -- | 50.25 | -- | This Head includes capital investment for minor works in the Solar Energy Centre and investment in Indian Renewable Energy Development Agencies (IREDA). |
| 9. | 6810 | Loans for Non-Conventional Sources Of Energy | 20.00 | -- | 15.00 | -- | 15.00 | -- | 14.00 | -- | This Head includes counterpart loan to IREDA for International Development Association (IDA) and Danish Export Finance Corporation (DEFC) components of grants under India Renewable Resources Development Project of the Ministry implemented through IREDA. |
| 10. | -- | Total Capital | 44.70 | -- | 65.25 | -- | 55.04 | -- | 64.25 | -- | ---- |
| 11. | -- | Total (Gross) | 298.36 | 5.52 | 597.00 | 6.64 | 380.00 | 6.57 | 626.00 | 6.90 | -- |

**MINUTES OF THE SEVENTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2006-2007) HELD ON 15.03.2007 IN COMMITTEE ROOM NO. 'B' PHA, NEW DELHI**

The Committee met from 1500 hours to 17.00 hrs.

PRESENT

1. Shri Gurudas Kamat - Chairman

MEMBERS

**LOK SABHA**

2. Prof. Chander Kumar
3. Sardar Sukhdev Singh Libra
4. Shri Sanat Kumar Mandal
5. Dr. Ravindra Kumar Rana
6. Shri Kiren Rijiju
7. Shri Vijayendra Pal Singh
8. Shri Tarit Baran Topdar

**RAJYA SABHA**

9. Shri Bimal Jalan
10. Shri Syed Azeez Pasha
11. Shri Veer Pal Singh Yadav

## SECRETARIAT

1. Shri P.K.Bhandari - Joint Secretary
2. Shri J.S. Chauhan - Deputy Secretary
3. Shri Shiv Kumar - Deputy Secretary

## REPRESENTATIVES OF MINISTRY OF NEW AND RENEWABLE ENERGY

| Sl. No. | Name | Designation |
|---|---|---|
| 1. | Shri V. Subramanian | Secretary |
| 2. | Shri A.K. Rath | Spl. Secretary & FA |
| 3. | Dr. S.K. Chopra | Pr. Adv. & Spl. Secy. |
| 4. | Shri Sunil Khatri | Joint Secretary |
| 5. | Shri Ajit K. Gupta | Scientist. G |
| 6. | Shri T.C.Tripathi | Sci. G |
| 7. | Shri N.P. Singh | Sci. G |
| 8. | Shri K.P. Sukumaran, | Sci. G |
| 9. | Dr. B.Bandopadhyay | Sci. G |
| 10. | Shri Sudhir Mohan | Sci. G |
| 11. | Dr. A.R. Shukla | Sci. G |
| 12. | Dr. B.M.S. Bist | Sci. G |
| 13. | Shri D. Majumdar, | M.D. (IREDA) |
| 14. | Shri M.P. Ramesh | Executive Director-C-WET |

At the outset, the Chairman welcomed the Members of the Committee and representatives of the Ministry of New and Renewable Energy to the sitting of the Committee and invited their attention to the provisions contained in Direction 58 of the Directions by the Speaker.

2. The representatives of the Ministry made a presentation on Demands for Grants of the Ministry of New and Renewable Energy for the year 2007-08.

3. The Members discussed with the representatives of the Ministry of New and Renewable Energy the following important points:

(i) Low utilisation of funds by the Ministry;

(ii) Dismantling of Commission for Additional Source of Energy.

(iii) Wind energy programme;

(iv) Schemes for rural electrification and small hydro power; and

(v) R&D in the various programmes of the Ministry.

4. A verbatim record of the proceedings of the sitting of the Committee has been kept.

5. The witnesses, then, withdrew

*The Committee then adjourned*

**MINUTES OF THE NINTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2006-2007) HELD ON 09.04.2007 IN COMMITTEE ROOM NO. 'G-074' PARLIAMENT LIBRARY BUILDING, NEW DELHI**

The Committee met from 1500 hours to 15.50 hrs.

PRESENT

1. Shri Gurudas Kamat - Chairman

**MEMBERS**

**LOK SABHA**

2. Shri Kailash Baitha
3. Shri Gaurishanker Chaturbhuj Bisen
4. Shri Mohan Jena
5. Prof. Chander Kumar
6. Sardar Sukhdev Singh Libra
7. Shri Sanat Kumar Mandal
8. Shri Dharmendra Pradhan
9. Dr. Ravindra Kumar Rana
10. Shri Vijayendra Pal Singh
11. Shri E.G. Sugavanam
12. Shri Tarit Baran Topdar

**RAJYA SABHA**

13. Shri Sudarshan Akarapu
14. Dr. K. Kasturirangan
15. Shri Syed Azeez Pasha
16. Shri Jesu Dasu Seelam
17. Shri Motilal Vora

## SECRETARIAT

1. Shri P.K.Bhandari - Joint Secretary
2. Shri J.S. Chauhan - Deputy Secretary
3. Shri Shiv Kumar - Deputy Secretary

At the outset, the Chairman Standing Committee on Energy welcomed the Members to the sitting of the Committee.

2. The Committee then took up for consideration the draft 19th Report on Demands for Grants of the Ministry of New and Renewable Energy for the year 2007-08.

3. The Committee adopted the draft Report with minor additions / amendments as suggested by the Members of the Committee.

4. The Committee also authorised the Chairman to finalise the Report after incorporating the changes suggested by the Members of the Committee and also making consequential changes arising out of factual verification, if any, by the concerned Ministry and also to present the same to both the Houses of Parliament.

*The Committee then adjourned*